

6. Bottomland Hardwood Forest

Rarity Rank: S4/G4G5

Synonyms: Mixed Bottomland Hardwoods, Broad Stream Margins, Hardwood Bottoms

Ecological Systems:

CES203.512 Lower Mississippi River Bottomland and Floodplain Forest

CES203.489 East Gulf Coastal Plain Large River Floodplain Forest

CES203.065 Red River Large Floodplain Forest

CES203.488 West Gulf Coastal Plain Large River Floodplain Forest

General Description:

Bottomland hardwood forests are forested, alluvial wetlands occupying broad floodplain areas that flank large river systems. These forests are found throughout Louisiana in all parishes, but are the predominant natural community type of the Mississippi River Alluvial Plain. They also play a major role in the EGCP where they are predominantly associated with the Pearl, and Bogue Chitto River floodplains, with some additional areas along the Tangipahoa, Natalbany, Tickfaw and Amite Rivers (Smith 1999b). Bottomland hardwood forests are characterized and maintained by a natural hydrologic regime of alternating wet and dry periods generally following seasonal flooding events. These forests support distinct assemblages of plants and animals associated with particular landforms, hydric soils, and hydrologic regimes. They are important natural communities for maintenance of water quality, providing a very productive habitat for a variety of fish and wildlife species, and are important in regulating flooding and stream recharge. Bottomland hardwoods are extremely productive areas due in part to periodic flood-transported and deposited particulate and dissolved organic matter and nutrients (LNHP 1986-2004). In general, forested floodplain habitats are mixtures of broadleaf deciduous, needleleaf deciduous, and evergreen trees and shrubs. Bottomland hardwood forests contain a number of species which can be aggregated into specific associations or communities based on environmental factors such as physiography, topography, soils, and moisture regime (Allen 1997, The Nature Conservancy 2004). In the far eastern portion of the EGCP, along the lower Pearl River, several species associations are recognized with *Quercus laurifolia* (laurel oak) being the community dominant and *Persea borbonia* (red bay) being common in the understory (White 1983).



The following are three associations recognized by the LNHP in bottomland hardwood forests of Louisiana (LNHP1986-2004):

1). **Overcup Oak - Water Hickory Bottomland Forest**

Quercus lyrata (overcup oak) and *Carya aquatica* (water hickory) are codominants of this floodplain forest which occurs on low-lying poorly drained flats, sloughs in the lowest backwater basins, and on low ridges with clay soils that are subject to inundation. Semi-permanently inundated or saturated soils are generally present for major portion of the growing season. Associate species include *Fraxinus pennsylvanica* (green ash), *Celtis laevigata* (hackberry), *Cornus foemina* (swamp dogwood), *Forestiera acuminata* (swamp privet), *Planera aquatica* (planertree), *Cephalanthus occidentalis* (buttonbush) and vines. This community type has a long successional stage.

2). **Hackberry-American Elm-Green Ash Bottomland Forest**

Celtis laevigata (hackberry), *Ulmus americana* (American elm), and *Fraxinus pennsylvanica* (green ash) are codominants. This community occurs in floodplains of major rivers on low ridges, flats and sloughs in first bottoms. Soils are seasonally inundated or saturated periodically for 1 to 2 months during the growing season. Common associates are *Carya aquatica* (water hickory), *Quercus texana* (nuttall oak), *Q. phellos* (willow oak), *Q. nigra* (water oak), *Q. lyrata* (overcup oak), *Liquidambar styraciflua* (sweetgum), *Acer negundo* (box elder), *Ulmus alata* (winged elm), *Acer rubrum* (red maple), *Gleditsia aquatica* (water locust) and *Plantanus occidentalis* (American sycamore). Understory species include *Cornus foemina* (swamp dogwood), *Crataegus* spp. (hawthorn), and *Morus rubra* (red mulberry). Many vines and herbaceous plants are present.

3). **Sweetgum-Water Oak Bottomland Forest**

The community dominants are *Liquidambar styraciflua* (sweetgum) and *Quercus nigra* (water oak). Major associates are *Celtis laevigata* (hackberry), *Fraxinus pennsylvanica* (green ash), *Ulmus americana* (American elm), and *Q. texana* (Nuttall oak). It occurs in alluvial floodplains, extensively in the Mississippi alluvial valley on well drained first bottom ridges. Associated species are *Acer rubrum* (red maple), *Morus rubra* (red mulberry), *Smilax* spp. (greenbrier), *Sabal minor* (dwarf palmetto), *Ilex decidua* (deciduous holly), *Crataegus viridis* (green hawthorn), *Ampelopsis arborea* (peppervine), *Campsis radicans* (trumpet creeper), and *Toxicodendron radicans* (poison ivy). Soils are seasonally saturated or inundated for up to 2 months during the growing season.

Current Extent and Status:

Bottomland hardwood forest loss is estimated to be 50 to 75 % of the original presettlement acreage, statewide (Smith 1993). Old-growth examples of this habitat type are very rare. In the MRAP, clearing for agricultural production was the primary factor that led to fragmentation and decline of this habitat type. Large tracts of bottomland

hardwood forest remain but most are either second or third growth stands. This habitat can be found within many of the WMAs managed by LDWF and on NWRs managed by the USFWS. WMAs support 304,982 acres of bottomland hardwoods, while NWRs contain another 150,000 acres. The U.S. Army Corps of Engineers (COE) oversees the Atchafalaya Basin Floodway which is the largest remaining block of bottomland hardwood forests and swamp in the U.S. (595,000



acres) yet most of the basin remains in private ownership. Louisiana's ECGP still contains extensive areas of bottomland hardwood forest primarily along the Pearl and Bogue Chitto Rivers in St. Tammany and Washington Parishes, respectively. Much of this acreage is contained within the Bogue Chitto NWR, managed by the USFWS, and Pearl River WMA, operated by LDWF. The lower Tangipahoa and Natalbany Rivers in Tangipahoa Parish, as well as the Tickfaw and Amite Rivers in Livingston Parish, support tracts of bottomland forest (Smith 1999a, Smith 1999b). Louisiana State Parks including Chicot, Lake Fausse Point, Tickfaw, Fontainebleau, and Bogue Chitto support bottomland hardwood forests. Other small privately owned bottomland hardwood sites are located within all parishes in the state, and a total of 4,400 acres of combined bottomland hardwood forests and swamps are registered with the Louisiana Natural Areas Registry Program. Restoration efforts have been in progress since the 1980's, and with the aid of the Conservation Reserve Program (CRP) and Wetland Reserve Program (WRP) over 365,000 acres have been reforested in Louisiana (R. Marcantel, personal communication). Reconnecting fragmented forest blocks and restoration of wetland forest functions are the major challenges to reforestation efforts and are essential to providing adequate wildlife habitat in bottomland hardwood forest systems.

BOTTOMLAND HARDWOOD FOREST SPECIES OF CONSERVATION CONCERN (34)		
AMPHIBIANS Southern Dusky Salamander Louisiana Slimy Salamander Strecker's Chorus Frog Eastern Spadefoot Southern Crawfish Frog	Yellow-throated Vireo Northern Parula Prothonotary Warbler Swainson's Warbler Louisiana Waterthrush Kentucky Warbler Hooded Warbler Field Sparrow Rusty Blackbird Orchard Oriole	MAMMALS Southeastern Shrew Southeastern Myotis Louisiana Black Bear Long-tailed Weasel Eastern Spotted Skunk
BIRDS Yellow-crowned Night-Heron Wood Stork Swallow-tailed Kite Bald Eagle American Woodcock Yellow-billed Cuckoo Wood Thrush	BUTTERFLIES Celia's Roadside Skipper Falcate Orangetip 'Seminole' Texan Crescent	REPTILES Alligator Snapping Turtle Western Worm Snake Common Rainbow Snake Timber Rattlesnake

Priority Species Research and Survey Needs:

Strecker's Chorus Frog: The current status of this species in Louisiana is uncertain, and it may be extirpated. Intensive surveys are needed to update occurrence records and abundance for inclusion in LNHP database.

Swallow-tailed Kite: Continue to inventory and monitor Swallow-tailed Kites on public and private lands to fill data gaps in distribution and abundance for inclusion in the LNHP database and Audubon nationwide database. Begin research to determine the effects of silviculture/land management practices on this species.

Rusty Blackbird: Initiate surveys to determine wintering population abundances and habitat use to augment Christmas Bird Counts.

Songbirds: Continue to support research on silviculture/land management practices and their effects on all songbird species in this habitat.

Waterbirds: Continue to conduct rookery surveys to update the LNHP database information.

'Seminole' Texan Crescent: Conduct surveys to determine current distribution and abundance for inclusion in the LNHP database.

Louisiana Black Bear: Continue research on ecology and support repatriation efforts.

Eastern Spotted Skunk: Considered critically imperiled in Louisiana, intensive surveys are needed to update occurrence records and abundance for inclusion in LNHP database.

Southeastern Shrew: Considered imperiled in Louisiana. Together with Arkansas and Missouri, Louisiana represents the western edge of its range. Intensive surveys needed to update occurrence records and abundance for inclusion in LNHP database.

Species Conservation Strategies:

1. Swallow-tailed Kite: Implement conservation and management recommendations of SWG project T9 (Coulson 2004).
2. Bald Eagle: Continue long-term monitoring of active bald eagle nests, successful breeding pairs, and fledged eagles.
3. Louisiana Black Bear: Partner with the Black Bear Conservation Committee (BBCC), USFWS and continue to support the implementation of recovery efforts for this species.
4. American Woodcock: Develop partnerships with state and federal agencies, NGOs, and the private sector to implement the American Woodcock Management Plan.

5. Promote the use of appropriate silvicultural techniques to restore/manage Bottomland Hardwood (BLH) forests for wildlife (include importance of tree species diversity, den trees for birds and mammals, leaf litter, etc). Snags should be retained during logging operations for cavity-nesting wildlife species. Efforts need to be made to maintain sufficient levels of woody debris in stands for reptiles, amphibians and small mammals.
6. Work with landowners to initiate or continue the implementation of PIF bird conservation plans, conservation plans developed for amphibians and reptiles, and USFWS threatened and endangered species recovery plans over the next 10 years.
7. Determine the microhabitat preferences and requirements of species utilizing bottomland hardwood forest to understand how these species are utilizing the habitat to determine management needs.

Threats Affecting Habitat:

The following table illustrates the threats identified for this habitat type and the sources of these threats. This represents all threats and sources of threats identified across all ecoregions of the state where this habitat occurs.

Source of Threat	Threat								
	Altered Composition/ Structure	Habitat Destruction or Conversion	Habitat Disturbance	Habitat Fragmentation	Herbivory	Modification of Water Levels; Changes in Natural Flow Patterns	Predation/ Parasitism/ Disease	Sedimentation	Toxins/ Contaminants
Channelization of rivers or streams	XXX	XXX				XXX			
Commercial/ industrial development		XXX		XXX					
Construction of ditches, drainage or diversion systems	XXX					XXX			
Conversion to agriculture or other forest types		XXX		XXX		XXX			
Crop production practices		XXX				XXX		XXX	XXX
Dam construction		XXX		XXX		XXX			
Development/maintenance of pipelines, roads or utilities		XXX	XXX	XXX		XXX			
Incompatible forestry practices	XXX		XXX	XXX		XXX			
Invasive/alien species	XXX	XXX			XXX				
Oil or gas drilling		XXX	XXX	XXX					
Operation of dams or reservoirs	XXX					XXX			
Operation of drainage or diversion systems	XXX	XXX	XXX			XXX			
Parasites/pathogens	XXX						XXX		
Recreational use/vehicles			XXX						
Residential development		XXX	XXX	XXX		XXX			

Habitat Conservation Strategies:

1. Continue to monitor nuisance species (nutria, beaver, etc.) and control them as needed.
2. Promote use of appropriate silvicultural techniques to restore/manage BLH forests for wildlife (include importance of tree species diversity), den trees for birds and mammals, etc.
3. Encourage the use of BMP's in the conservation of this habitat type.
4. Work with NRCS and LFA to promote economic value of hardwood lumber to encourage the management/restoration of this habitat.
5. Support research regarding palmetto abundance in bottomlands and effects on wildlife species and habitat structure.
6. Work with adjoining states to address water management issues that affect bottomland hardwood habitat in Louisiana.
7. Work with BBCC, Louisiana Department of Transportation and Development (DOTD), NRCS, USFWS, U.S. Forest Service (USFS), private landowners, etc. to promote corridors of bottomland hardwood forests for wildlife species.
8. Work with oil and gas corporations to encourage the use of directional drilling to minimize the environmental impacts to this habitat.

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